Atopic dermatitis caused by vaccine-induced allergy to Saccharomyces cerevisiae?

Vinu Arumugham

Aug 2016

vinucubeacc@gmail.com

Sensitization to Saccharomyces cerevisiae has been associated with many conditions[1,2] including atopic dermatitis.[3]

Many vaccines including Hepatitis B vaccines are manufactured using Saccharomyces cerevisiae (baker's yeast).[4–6]
Wiedermann et al.[7] anticipated that the large yeast protein content (5%) in the Hepatitis B vaccine from Smith, Kline and French (now Engerix B from Glaxo Smith Kline), was a risk factor for IgE/IgG antibody synthesis against Saccharomyces cerevisiae. However, Wiedermann et al. found no IgE or IgG synthesis in the study population and concluded that the yeast content in the vaccine was safe. Reviewing the details of their study suggests that this matter needs to be revisited.

Wiedermann et al. studied only 50 healthy adult subjects. Engerix B today is administered to millions of babies, the day they are born. The subjects in the study who were born at least 50 years ago, were less atopic than children born now.[8] The adult subjects in the study having been exposed to yeast via the oral route, throughout their lifetime, would have developed immune tolerance to it.[9] This may explain their unresponsiveness to injected yeast antigen. Newborns of course have had very little exposure to yeast prior to the Hepatitis B vaccine they receive at birth. Not all study subjects received the full dose of hepatitis B surface antigen (HbsAg) of 20 mcg (and proportional quantity of yeast contaminants). Adult subjects likely weighed on average about 150 lb., compared to about 7 lb. for newborns. Recommended adult dosage is 20 mcg and pediatric dose is 10 mcg HbsAg. With a ~20x body weight difference and only a 2x antigen dosage difference, one can expect pediatric vaccine recipients to have significantly longer immune system exposure to both HbsAg and the yeast contaminants. Thus increasing the risk of inducing IgE/IgG antibodies to yeast.

Many studies on vaccine adverse events focus only on the "active ingredients".[10,11] For example, Hepatitis B vaccines Recombivax HB[6] and Engerix B[4] are considered equivalent. However, Engerix B can have 5X the amount of yeast proteins as Recombivax HB! So, the results of studies that only focus on the "active ingredients" can be misleading if the adverse event is caused by the excipients or contaminants in the vaccine.

Sensitization to yeast proteins in vaccines may thus explain the epidemic of atopic dermatitis in children today.

References

1. Giaffer MH, Clark A, Holdsworth CD. Antibodies to Saccharomyces cerevisiae in patients with Crohn's disease and their possible pathogenic importance. Gut. 1992;33(8):1071–5.

2. Israeli E, Grotto I, Gilburd B, Balicer RD, Goldin E, Wiik A, et al. Anti-Saccharomyces cerevisiae and antineutrophil cytoplasmic antibodies as predictors of inflammatory bowel disease. Gut. 2005;54(9):1232–6.

3. Kortekangas-Savolainen O, Lammintausta K, Kalimo K. Skin prick test reactions to brewer's yeast (Saccharomyces cerevisiae) in adult atopic dermatitis patients. Allergy. Blackwell Publishing Ltd; 1993;48(3):147–50.

4. Engerix B Package Insert [Internet]. [cited 2016 May 8]. Available from: http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM224503.pdf

5. Gardasil Package Insert [Internet]. Available from: http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM111263.pdf

6. Recombivax HB Package Insert [Internet]. [cited 2016 May 8]. Available from: http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM110114.pdf

7. Wiedermann G, Scheiner O, Ambrosch F, Kraft D, Kollaritsch H, Kremsner P, et al. Lack of Induction of IgE and IgG Antibodies to Yeast in Humans Immunized with Recombinant Hepatitis B Vaccines. Int Arch Allergy Immunol. 1988;85(1):130–2.

8. Arumugham V. Evidence that Food Proteins in Vaccines Cause the Development of Food Allergies and Its Implications for Vaccine Policy. J Dev Drugs. 2015;4(137):2.

9. Pabst O, Mowat AM. Oral tolerance to food protein. Mucosal Immunol. Society for Mucosal Immunology; 2012 May;5(3):232–9.

10. Grüber C, Warner J, Hill D, Bauchau V. Early atopic disease and early childhood immunization--is there a link? Allergy. 2008;63(11):1464–72.

11. Olesen AB, Juul S, Thestrup-Pedersen K. Atopic Dermatitis Is Increased Following Vaccination for Measles, Mumps and Rubella or Measles Infection. Acta Derm Venereol. 2003;83(6):445–50.